CLAIMS:

1. A corneal topographer, comprising:

an illumination projection subsystem to project a series of preselected different stationary patterns of one or more slits of light in ordered succession onto the surface of the cornea;

an image capture subsystem to capture a still image of each projected pattern; and,

an image processing subsystem to convert the still images into topographical information of the cornea.

2. A corneal topographer according to claim 1, wherein the illumination projection subsystem makes use of collimated LEDs, masked and focussed onto the eye.

3. A corneal topographer according to claim 2, wherein there are up to forty-eight LEDs producing the same number of slits.

4. A corneal topographer according to claim 1, 2 or 3, wherein the slits are projected in up to twenty different patterns.

5. A corneal topographer according to claim 2 or 3, wherein the LEDs are housed together in sets with a common focussing arrangement.

6. A corneal topographer according to any one of claims 1 to 5, wherein a CCD video camera is used under the control of a computer to capture the still images.

7. A corneal topographer according to claim 6, wherein the computer also controls a frame grabber to capture a still image every time a new combination of slits is projected onto the cornea.

8. A corneal topographer according to any preceding claim, wherein analysis involves registration of the whole image sequence to compensate for saccadic or other eye movements that occur in the time interval between capture of successive images;

next, image processing determines the two edges of the slits as they are shown on the image;

the edges are then converted into mathematical curves;

the curves are then used to determine the external shape of the cornea, the inside surface of the cornea, and all the local shape variations in these surfaces.

9. A corneal topographer according to claim 8, wherein the thickness of the cornea is also calculated.

10. A corneal topographer according to claim 8, wherein reflections off other surfaces are used to calculate the volume of the anterior chamber and distances to the lens.

11. A corneal topographer according to any one of claims 1 to 10, further including means to display the topography data.

12. A method for corneal topography, comprising the following steps:

projecting a series of preselected different stationary patterns of one or more slits of light in ordered succession onto the surface of the cornea;

capturing a still image of each projected pattern; and,

converting the still images into topographical information of the cornea.

13. A method according to claim 12, wherein analysis involves registration of the whole image sequence to compensate for saccadic or other eye movements that occur in the time interval between capture of successive images.

14. A method according to claim 12 or 13, wherein image processing determines the two edges of the slits as they are shown on the image.

15. A method according to claim 14, wherein the edges are converted into mathematical curves.

16. A method according to claim 15, wherein the curves are used to determine the external shape of the cornea, the inside surface of the cornea, and all the local shape variations in these surfaces.

17. A method according to claim 16, wherein the thickness of the cornea is also calculated.

18. A method according to claim 16 or 17, wherein reflections off other surfaces are used to calculate the volume of the anterior chamber and distances to the lens.

19. A method according to any one of claims 12 to 18, further including the step of displaying the topography data.

20. A corneal topographer substantially as hereinbefore described with reference to the accompanying drawings.

21. A method for corneal topography substantially as hereinbefore described with reference to the accompanying drawings.